

Notice of Allowability

Application No.

10/701,047

Applicant(s)

XIA ET AL.

Examiner

Art Unit

Khanh Tran

2611

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the Amendment filed on 03/06/2006.
2. ☒ The allowed claim(s) is/are 1-5, 7-9, 12-31, 33-36 and 38-53, which have been renumbered as set forth in the Office action.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: ____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date ____.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date ____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date ____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date ____
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other ____.

1. The Amendment filed on 03/06/2006 has been entered. Claims 1-5, 7-9, 12-31, 33-36 and 38-53 are pending in this Office action.

2. Claims have been renumbered as shown below respectively:

- claims 7-9 renumbered as claims 6-8;
- claims 12-16 renumbered as claims 9-13;
- claims 17-21 renumbered as claims 14-18;
- claims 22-30 renumbered as claims 19-27;
- claim 31 renumbered as claim 28;
- claims 33-35 renumbered as claims 29-31;
- claim 36 renumbered as claim 32;
- claim 38 renumbered as claim 33;
- claims 39-42 renumbered as claims 34-37;
- claims 43-48 renumbered as claims 38-43; and
- claims 49-53 renumbered as claims 44-48.

EXAMINER'S AMENDMENT

3. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided

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by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

The application has been amended as follows:

Regarding claim 1, in line 5, "FIR" has been changed to -- Finite Impulse Response (FIR) --.

Regarding claim 7, in line 3, "FIR" has been changed to -- Finite Impulse Response (FIR) --.

Regarding claim 12, in line 11, "FIR" has been changed to -- Finite Impulse Response (FIR) --.

Regarding claim 14, in line 2, "ATSC" has been changed to -- Advanced Television Systems Committee (ATSC) --.

Regarding claim 15, in line 2, "QAM" has been changed to -- Quadrature Amplitude Modulation (QAM) --.

Regarding claim 16, in line 2, "QAM" has been changed to -- Quadrature Amplitude Modulation (QAM) --.

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Regarding claim 17, in line 10, "FIR" has been changed to -- Finite Impulse Response (FIR) --.

Regarding claim 19, in line 2, "ATSC" has been changed to -- Advanced Television Systems Committee (ATSC) --.

Regarding claim 20, in line 2, "QAM" has been changed to -- Quadrature Amplitude Modulation (QAM) --.

Regarding claim 21, in line 2, "QAM" has been changed to -- Quadrature Amplitude Modulation (QAM) --.

Regarding claim 24, in line 2, "ATSC" has been changed to -- Advanced Television Systems Committee (ATSC) --.

Regarding claim 25, in line 2, "QAM" has been changed to -- Quadrature Amplitude Modulation (QAM) --.

Regarding claim 26, in line 2, "QAM" has been changed to -- Quadrature Amplitude Modulation (QAM) --.

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Regarding claim 46, in line 2, "ATSC" has been changed to -- Advanced Television Systems Committee (ATSC) --.

Regarding claim 47, in line 2, "QAM" has been changed to -- Quadrature Amplitude Modulation (QAM) --.

Regarding claim 48, in line 2, "QAM" has been changed to -- Quadrature Amplitude Modulation (QAM) --.

Regarding claim 51, in line 2, "ATSC" has been changed to -- Advanced Television Systems Committee (ATSC) --.

Regarding claim 52, in line 2, "QAM" has been changed to -- Quadrature Amplitude Modulation (QAM) --.

Regarding claim 53, in line 2, "QAM" has been changed to -- Quadrature Amplitude Modulation (QAM) --.

Response to Arguments

4. Applicant's arguments, see page 18, filed on 03/06/2006, with respect to claims 1 and 7 have been fully considered and are persuasive. The rejection of claims 1 and 7 has been withdrawn.

5. The Terminal Disclaimer filed on 03/06/2006 has been reviewed and entered.

Reasons for Allowance

The following is an examiner's statement of reasons for allowance:

6. Regarding claim 1, claim 1 is allowed over prior art of record since the cited references, taken individually or in combination, fail to particularly disclose an adaptive equalizer comprising uniquely distinct features "wherein an error signal is generated by subtracting the decision feedback output from the decision device output, the error signal being used to update coefficients of the taps of the FIR filter and the decision feedback equalizer" and "wherein a magnitude of the change to the coefficients is selected based at least in part the reliability output of the trellis decoder".

7. Regarding claim 7, claim 7 is allowed over prior art of record since the cited references, taken individually or in combination, fail to particularly disclose an adaptive equalizer comprising uniquely distinct features "wherein the error signal is generated by

delaying the decision feedback output and subtracting it from the decoded output" and "wherein a magnitude of change in the coefficients is selected based at least in part upon the reliability output".

8. Regarding claim 12, the claim is allowed over prior art of record since the cited references, taken individually or in combination, fail to particularly disclose an adaptive equalizer comprising uniquely distinct features "a decision error signal created by operably combining the equalizer output signal and the decision device output signal" and "a reliability-decision directed adaptation signal created by operably combining the decision error signal with the symbol reliability output signal". It is noted that the closest prior art, Nicolas et al. (US 5,453,797) and Tan et al. (US 6,226,323 B1), discloses a similar adaptive equalizer, however, fails to anticipate or render the above underlined limitations obvious.

9. Regarding claim 17, the claim is allowed over prior art of record since the cited references, taken individually or in combination, fail to particularly disclose an adaptive equalizer comprising uniquely distinct features "a symbol mapper operably coupled to the error-corrected symbol output signal and providing a mapped and scaled symbol output signal" and "a decision error signal created by operably combining the equalizer output signal and the mapped and scaled symbol output signal" and "a reliability-decision directed adaptation signal created by operably combining the decision error signal with the output of the symbol reliability output". It is noted that the closest prior

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art, Nicolas et al. (US 5,453,797) and Tan et al. (US 6,226,323 B1), discloses a similar adaptive equalizer, however, fails to anticipate or render the above underlined limitations obvious.

10. Regarding claim 22, the claim is allowed over prior art of record since the cited references, taken individually or in combination, fail to particularly disclose a method for creating a reliability-decision directed adaptation signal for adapting an adaptive equalizer, the method comprising uniquely distinct features "combining operatively the error-corrected symbol output signal and the equalizer output signal to produce a decision error signal" and "combining operatively the decision error signal and the symbol reliability output signal to produce the reliability-decision directed adaptation signal". It is noted that the closest prior art, Nicolas et al. (US 5,453,797) and Tan et al. (US 6,226,323 B1), discloses a similar adaptive equalizer, however, fails to anticipate or render the above underlined limitations obvious.

11. Regarding claim 31, the claim is allowed over prior art of record since the cited references, taken individually or in combination, fail to particularly disclose a method for adapting an adaptive equalizer comprising a plurality of coefficients and a means for adapting the plurality of coefficients, the method comprising the uniquely distinct feature "modifying the step size of the means for adapting the plurality of coefficients in relation to a magnitude of the symbol reliability signal".

12. Regarding claim 36, the claim is allowed over prior art of record since the cited references, taken individually or in combination, fail to particularly disclose a method for adapting an adaptive equalizer comprising a plurality of coefficients and a means for adapting the plurality of coefficients, the method comprising the uniquely distinct features "wherein said symbol reliability signal is operably coupled to the step size" and "wherein the magnitude of the adaptation applied to the plurality of coefficients is governed by the symbol reliability signal".

13. Regarding claim 39, the claim is allowed over prior art of record since the cited references taken individually or in combination fails to particularly disclose a method for creating a reliability-decision directed adaptation signal for adapting an adaptive equalizer, the method comprising uniquely distinct features "operably combining the decision device output signal and the equalizer output signal to create a decision error signal" and "operably combining the decision error signal and the symbol reliability signal to produce the reliability-decision directed adaptation signal". It is noted that the closest prior art, Nicolas et al. (US 5,453,797) and Tan et al. (US 6,226,323 B1), discloses a similar adaptive equalizer, however, fails to anticipate or render the above underlined limitations obvious.

14. Regarding claim 43, the claim is allowed over prior art of record since the cited references taken individually or in combination fails to particularly disclose a method for adapting a response of an adaptive equalizer, the method comprising

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uniquely distinct features "forming a reliability-decision directed adaptation signal related to the error-corrected decoder symbol signal by operably combining the equalizer output signal, error-corrected decoder symbol signal and the symbol reliability signal". It is noted that the closest prior art, Nicolas et al. (US 5,453,797) and Tan et al. (US 6,226,323 B1), discloses a similar adaptive equalizer, however, fails to anticipate or render the above underlined limitations obvious.

15. Regarding claim 49, the claim is allowed over prior art of record since the cited references taken individually or in combination fails to particularly disclose a method for adapting a response of an adaptive equalizer, the method comprising uniquely distinct features "forming a reliability-decision directed adaptation signal related to the error-corrected decoder symbol signal by operably combining the equalizer output signal, error-corrected decoder symbol signal and the symbol reliability signal". It is noted that the closest prior art, Nicolas et al. (US 5,453,797) and Tan et al. (US 6,226,323 B1), discloses a similar adaptive equalizer, however, fails to anticipate or render the above underlined limitations obvious.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Khanh Tran whose telephone number is 571-272-3007. The examiner can normally be reached on Monday - Friday from 08:00 AM - 05:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay Patel can be reached on 571-272-2988. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

KCT

Khanhcong Tran

05/11/2006

Primary Examiner

KHANH TRAN